Click here to return to Appendix A.5 Contents

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Aberdeen River	LOCATION TPSD - TT3001
STATION # TT3001 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, O'Neill	
FORM COMPLETED BY Roberts	DATE 6/22/01 TIME 1130 AM (PM)
REASON FOR SURVEY Triad Sampling	

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
40%	%cloud cover	☒ 100 %
☐	clear/sunny	☐

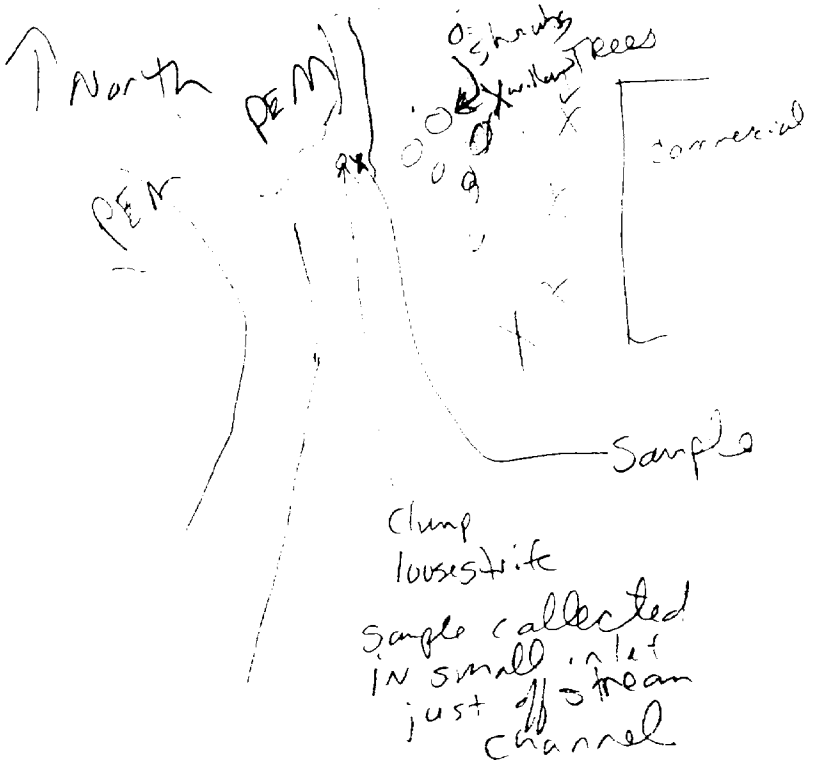
Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No Heavy rain 6/17 T-storm 6/20

Air Temperature 75°F

Other _____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)



STREAM CHARACTERIZATION

Stream Subsystem: ☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type: ☐ Coldwater ☒ Warmwater

Stream Origin: ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☒ Mixture of origins ☒ Other _____

Catchment Area _____ km²

TT3001

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☐ Forest ☒ Commercial ☒ Industrial (light) ☐ Agricultural ☐ Field/Pasture ☐ Residential ☐ Other ____

Local Watershed NPS Pollution
☐ No evidence ☐ Some potential sources ☐ Obvious sources

Local Watershed Erosion
☐ None ☐ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
☒ Trees ☒ Shrubs ☐ Grasses ☐ Herbaceous

dominant species present willow, red maple, elderberry, purple loosestrife, tussock sedge

INSTREAM FEATURES

Estimated Reach Length ____ m
Estimated Stream Width 5 ft m
Sampling Reach Area 10 ft² m²
Area in km² (m²x1000) ____ km²
Estimated Stream Depth 3-10" m

Surface Velocity (at thalweg) ____ m/sec moderate flow main Chain. Low flow @ sample

Canopy Cover
☐ Partly open ☐ Partly shaded ☐ Shaded open

High Water Mark ____ m
water level high

Proportion of Reach Represented by Stream Morphology Types
☐ Riffle 0 % ☒ Run 50 % ☒ Pool 50 %

Channelized ☐ Yes ☒ No

Dam Present ☐ Yes ☒ No

LARGE WOODY DEBRIS

LWD ____ m² 5%

Density of LWD ____ m²/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☒ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae

dominant species present few Ludwigia palustris

Portion of the reach with aquatic vegetation 10 %

WATER QUALITY

Temperature 21.65 °C
Specific Conductance 346.00
Dissolved Oxygen 5.46
pH 7.49
Turbidity 5.0 NTU
WQ Instrument Used YSI ORP -49.1

Water Odors
☒ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other ____

Water Surface Oils
☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☒ None ☐ Other ____

Turbidity (if not measured)
☐ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other ____

SEDIMENT/ SUBSTRATE

Odors
☒ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other ____

Oils
☒ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other Iron ?

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☐ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	50
Boulder	> 256 mm (10")	0			
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic (FPOM)	50
Gravel	2-64 mm (0.1"-2.5")	0			
Sand	0.06-2mm (gritty)	10 %	Marl	grey, shell fragments	60%
Silt	0.004-0.06 mm	90 %			
Clay	< 0.004 mm (slick)	0			

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME Aberjona River	LOCATION IPSD-TT3001 - South of Salem St
STATION # 30-01 RIVERMILE ______	STREAM CLASS
LAT ______ LONG ______	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, O'Neill, Hoskins on 6/21	
FORM COMPLETED BY Roberts	DATE 6/22/01 TIME 1:30 AM (PM) REASON FOR SURVEY Triad sampling

Stream

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover 11	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking
SCORE	20 19 18 17 16	15 14 13 12 (11)	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization 14	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability 6	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 (6)	5 4 3 2 1 0
4. Sediment Deposition 5	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	(5) 4 3 2 1 0
5. Channel Flow Status 18	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Some small pools [illegible]

[illegible] deposition : black muck deposits [illegible] peat

77301

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration 17 SCORE	Channelization or dredging absent or minimal; stream with normal pattern. 20 19 18 (17) 16	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. 15 14 13 12 11	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. 10 9 8 7 6	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. 5 4 3 2 1 0
7. Channel Sinuosity 15 SCORE	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) 20 19 18 17 16	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line. 15 14 13 (12) 11	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line. 10 9 8 7 6	Channel straight; waterway has been channelized for a long distance. 5 4 3 2 1 0
8. Bank Stability (score each bank) SCORE 9 (LB) SCORE 9 (RB)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. Left Bank 10 (9) Right Bank 10 (9)	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. 8 7 6 8 7 6	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. 5 4 3 5 4 3	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. 2 1 0 2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream. SCORE 10 (LB) SCORE 10 (RB)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. Left Bank (10) 9 Right Bank (10) 9	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. 8 7 6 8 7 6	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. 5 4 3 5 4 3	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. 2 1 0 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone) SCORE 6 (LB) SCORE 10 (RB)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. Left Bank 10 9 Right Bank (10) 9	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. 8 7 (6) 8 7 6	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. 5 4 3 5 4 3	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. 2 1 0 2 1 0

Total Score 140

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Phillips Pond	LOCATION IPSD-PP03
STATION # PP03 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, O'Neill,	
FORM COMPLETED BY Roberts	DATE 6/25/01 TIME 10:10 (AM) PM
REASON FOR SURVEY Triad Sampling	

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
20%	%cloud cover	☒ 90%
☐	clear/sunny	☐

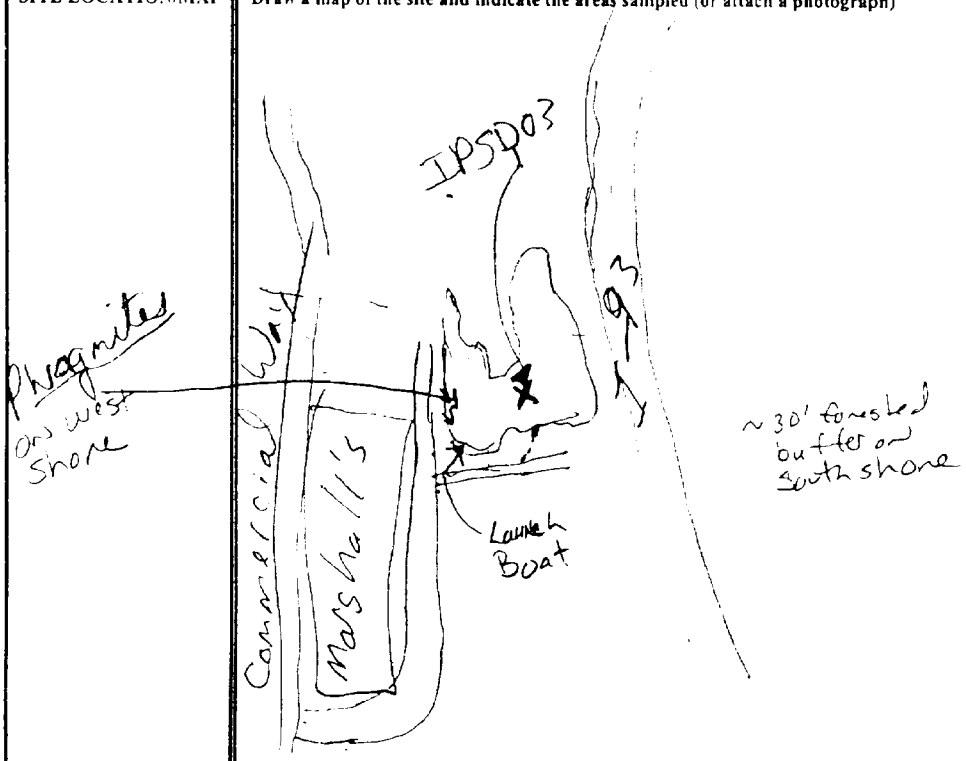
Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No 5 showers 6/25

Air Temperature 76°F

Other_____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)



STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☒ Warmwater

Stream Origin
☐ Glacial ☐ Spring-fed
☐ Non-glacial montane ☐ Mixture of origins
☐ Swamp and bog ☒ Other_____

Catchment Area_____km²

PP03

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☒ Forest buffer ☒ Commercial
☐ Field/Pasture ☐ Industrial
☐ Agricultural ☒ Other Highway
☐ Residential

Local Watershed NPS Pollution
☐ No evidence ☒ Some potential sources highway/commercial facil. fires
☐ Obvious sources

Local Watershed Erosion
☐ None ☐ Moderate ☐ Heavy potential sources

RIPARIAN VEGETATION (18 meter buffer) ~80m wide

Indicate the dominant type and record the dominant species present
☒ Trees ☒ Shrubs ☐ Grasses ☒ Herbaceous
dominant species present red maple, buckthorn (collected), jewelweed

INSTREAM FEATURES meas. from max. width of pond

Estimated Reach Length ____ m
Estimated Stream Width 200ft
Sampling Reach Area 205ft
Area in km² (m²x1000) ____ km²
Estimated Stream Depth 13.9ft
Surface Velocity (at thalweg) 0 m/sec

Canopy Cover
☐ Partly open ☐ Partly shaded ☐ Shaded open
High Water Mark ____ m near right water level
Proportion of Reach Represented by Stream Morphology Types
☐ Riffle ____ % ☐ Run ____ %
☒ Pool 100 %
Channelized ☐ Yes ☒ No
Dam Present ☐ Yes ☒ No Beaver dam at outlet

LARGE WOODY DEBRIS

LWD ____ m² 0% None
Density of LWD ____ m²/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae
dominant species present None
Portion of the reach with aquatic vegetation ____ % 0%

WATER QUALITY

Temperature 17.0 °C
Specific Conductance 476.0 µS/cm
Dissolved Oxygen 0.74 mg/L
pH 6.68
Turbidity 2.3 NTU
WQ Instrument Used YSI - 87.6mV

Taken at ~6' or @ 7ft above sed.

Water Odors
☒ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other____

Water Surface Oils
☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
☒ None ☐ Other____

Turbidity (if not measured)
☐ Clear ☐ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other____

SEDIMENT/ SUBSTRATE

Odors
☒ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other____

Oils
☐ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☐ Relict shells ☐ Other none

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☐ No

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	10%
Boulder	> 256 mm (10")	0			
Cobble	64-256 mm (2.5"-10")	80	Muck-Mud	black, very fine organic (FPOM)	90%
Gravel	2-64 mm (0.1"-2.5")				
Sand	0.06-2mm (gritty)	0	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	10%			
Clay	< 0.004 mm (slick)	0			

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME Phillips Pond	LOCATION IPSD - PP03	
STATION # IPS004 RIVERMILE	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS Roberts, O'Neill		
FORM COMPLETED BY Roberts	DATE 6/25/01 TIME 10:10 (AM) PM	REASON FOR SURVEY Triad Sampling

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover 11 SCORE	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). 20 19 18 17 16	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). 15 14 13 12 (11)	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Pool Substrate Characterization 8 SCORE	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. 20 19 18 17 16	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present. 15 14 13 12 11	All mud or clay or sand bottom; little or no root mat; no submerged vegetation. 10 9 (8) 7 6	Hard-pan clay or bedrock; no root mat or vegetation. 5 4 3 2 1 0
3. Pool Variability N/A SCORE	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present. 20 19 18 17 16	Majority of pools large-deep; very few shallow. 15 14 13 12 11	Shallow pools much more prevalent than deep pools. 10 9 8 7 6	Majority of pools small-shallow or pools absent. 5 4 3 2 1 0
4. Sediment Deposition 2 SCORE	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition. 20 19 18 17 16	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools. 15 14 13 12 11	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. 10 9 8 7 6	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; ~~pools almost absent due to substantial sediment deposition.~~ 5 4 3 (2) 1 0
5. Channel Flow Status 20 SCORE	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. 20 19 18 17 16	Water fills >75% of the available channel; or <25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools. 5 4 3 2 1 0

Pond

3303

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category: Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration 15	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	(15) 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity 5 N/A	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	(5) 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 6 (LB)	Left Bank 10 9	[illegible]	5 4 3	2 1 0
SCORE 8 (RB)	Right Bank 10 9	(8) 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 9 (LB)	Left Bank 10 (9)	8 7 6	5 4 3	2 1 0
SCORE 9 (RB)	Right Bank 10 (9)	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 3 (LB)	Left Bank 10 9	8 7 6	5 4 (3)	2 1 0
SCORE 4 (RB)	Right Bank 10 9	8 7 6	5 (4) 3	2 1 0

Pond created 25 yrs

Pond [illegible]

Total Score 102

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME So. Bl. Aberjona R	LOCATION IPSD-TTSA01
STATION # TTSA01 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, O'Neill, Munnett, Kasin, deMay	
FORM COMPLETED BY Roberts	DATE 6/25/01 TIME 2pm AM (PM)
REASON FOR SURVEY Triad Sampling	

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
10 % ☐	%cloud cover	☐ ___ %
☐	clear/sunny	☐

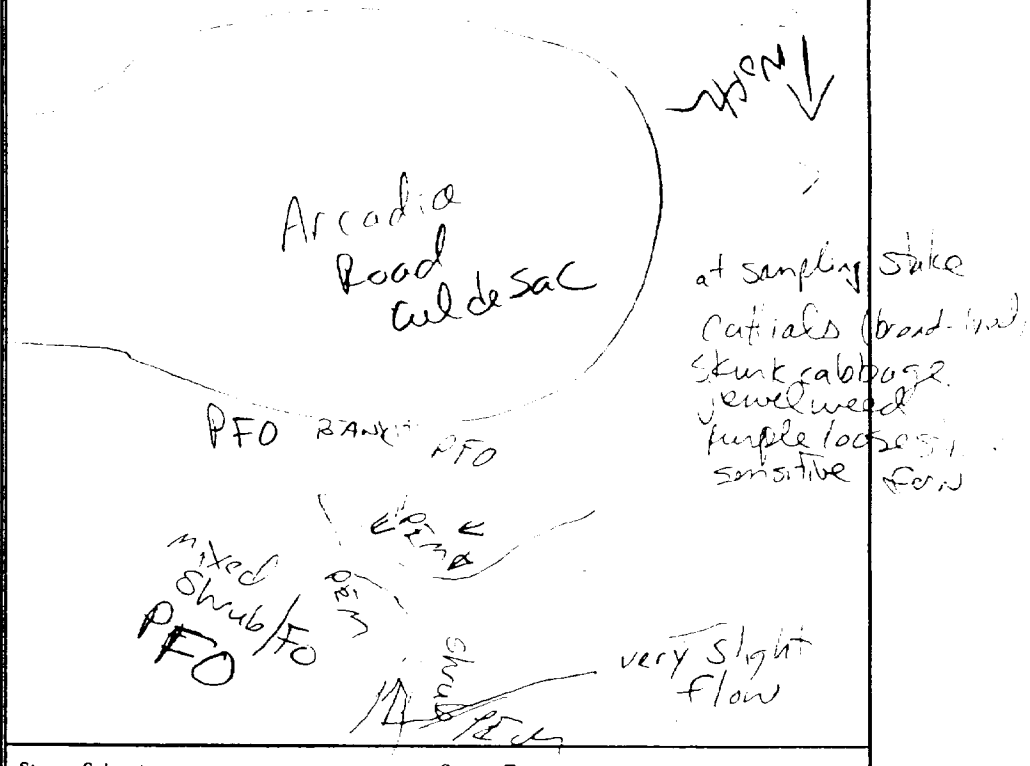
Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No Showers yesterday

Air Temperature ___ °F 80-85 °F

Other _____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)



STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☒ Warmwater

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☐ Mixture of origins
☒ Other _____

Catchment Area _____ km²

TTSA01

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☒ Forest ☐ Commercial
☐ Field/Pasture ☐ Industrial
☐ Agricultural ☐ Other _____
☒ Residential

Local Watershed NPS Pollution
☒ No evidence ☐ Some potential sources
☐ Obvious sources Road run-off?

Local Watershed Erosion
☒ None ☐ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
☒ Trees ☒ Shrubs ☐ Grasses ☒ Herbaceous

dominant species present red maple, No viburnum, cattails (broadleaf)

INSTREAM FEATURES

Estimated Reach Length ____ m
Estimated Stream Width 5ft m
Sampling Reach Area 5ft² m²
Area in km² (m²x1000) ____ km²
Estimated Stream Depth 0.7 m ft
Surface Velocity (at thalweg) 0 to very low flow m/sec

Canopy Cover
☐ Partly open ☐ Partly shaded ☐ Shaded open

High Water Mark ____ m

Proportion of Reach Represented by Stream Morphology Types
☐ Riffle ____ % ☐ Run ____ %
☒ Pool 100 %

Channelized ☐ Yes ☒ No
Dam Present ☐ Yes ☒ No

LARGE WOODY DEBRIS

LWD ____ m² <5% few small branches, shrubs, wood
Density of LWD ____ m²/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae

dominant species present None in sample area

Portion of the reach with aquatic vegetation 0 %

WATER QUALITY

Temperature 25.0 °C
Specific Conductance 27700
Dissolved Oxygen 5.73
pH 6.91
Turbidity 24.8 NTU 11.7 NTU
WQ Instrument Used YSI
ORP -58.2 mV

Water Odors
☒ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other _____

Water Surface Oils
☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
☒ None ☐ Other _____

Turbidity (if not measured)
☐ Clear ☐ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other _____

SEDIMENT/ SUBSTRATE

Odors
☒ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other _____

Oils
☒ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☐ Relict shells ☒ Other None

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☐ No N/A

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	50
Boulder	> 256 mm (10")	0			
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic (FPOM)	50
Gravel	2-64 mm (0.1"-2.5")	0			
Sand	0.06-2mm (gritty)	30	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	70			
Clay	< 0.004 mm (slick)	0			

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME S.B. Aberjona River	LOCATION TPSD - TTSA01
STATION # TTSA01 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, O'Neill, Munney	
FORM COMPLETED BY Roberts	DATE 6/25 TIME 2pm AM (PM)
REASON FOR SURVEY Triad Sampling	

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover 13	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. n/c	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization 10	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability 5	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition 5	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status 19	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

TTSA01

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration 19	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 (19) 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity 14 N/A	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 10 (LB)	Left Bank (10) 9	8 7 6	5 4 3	2 1 0
SCORE 10 (RB)	Right Bank (10) 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 10 (LB)	Left Bank (10) 9	8 7 6	5 4 3	2 1 0
SCORE 10 (RB)	Right Bank (10) 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 5 (LB)	Left Bank 10 9	8 7 6	(5) 4 3	2 1 0
SCORE 10 (RB)	Right Bank (10) 9	8 7 6	5 4 3	2 1 0

Total Score 126

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET
(FRONT)

STREAM NAME So. B. Aborona	LOCATION IPSD-TTSD01
STATION # TTSD01 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, O'Neill, Losiu, deMay	
FORM COMPLETED BY Roberts	DATE 6/25/01 TIME 9 ☐AM ☐PM
REASON FOR SURVEY Triad Sampling	

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
5%	%cloud cover	100%
☐	clear/sunny	☐

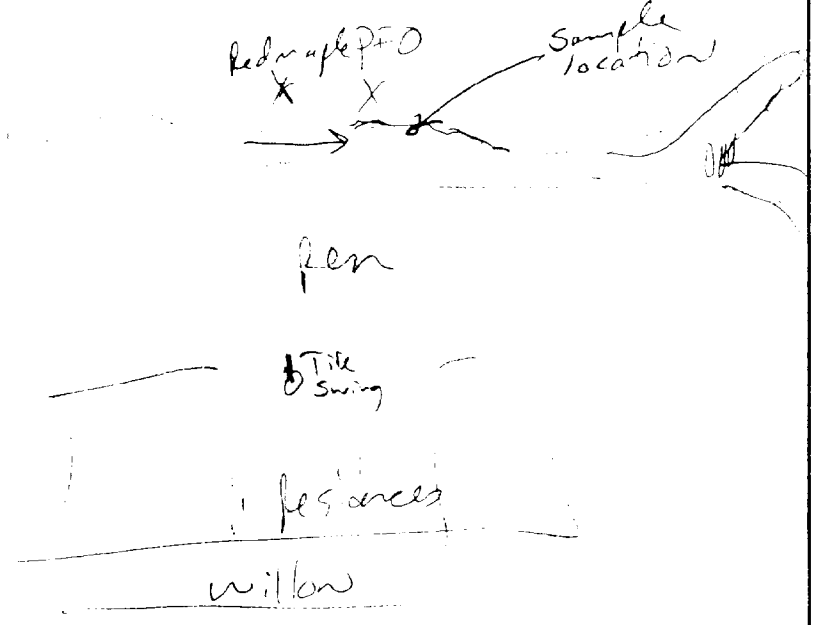
Has there been a heavy rain in the last 7 days? ☐ Yes ☐ No

Air Temperature_____ °C

Other_____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)



STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☒ Warmwater

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☐ Mixture of origins
☒ Other other

Catchment Area_____ km²

TTSD01

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☒ Forest ☐ Commercial
☐ Field/Pasture ☐ Industrial
☐ Agricultural ☐ Other _____
☒ Residential

Local Watershed NPS Pollution
☒ No evidence ☐ Some potential sources
☐ Obvious sources

Local Watershed Erosion
☒ None ☐ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
☒ Trees ☒ Shrubs ☐ Grasses ☒ Herbaceous
dominant species present red maple, dogwood, swordweed, sensitive fern

INSTREAM FEATURES

Estimated Reach Length ____ m
Estimated Stream Width 15 ft
Sampling Reach Area 35 sf
Area in km² (m² x1000) ____ km²
Estimated Stream Depth 3-4" ft
Surface Velocity (at thalweg) Low flow adjacent channel

Canopy Cover
☐ Partly open ☒ Partly shaded ☐ Shaded

High Water Mark ____ m

Proportion of Reach Represented by Stream Morphology Types
☐ Riffle ____ % ☒ Run ____ %
☐ Pool ____ %

Channelized ☐ Yes ☒ No
Dam Present ☐ Yes ☒ No

LARGE WOODY DEBRIS

LWD 107 pcs
Density of LWD ____ m²/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☒ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae
dominant species present Ludwigia palustris
Portion of the reach with aquatic vegetation ____ %

WATER QUALITY

Temperature 24.7 °C
Specific Conductance 47.00
Dissolved Oxygen 4.47 ppm
pH 6.93
Turbidity 7.5 NTU
WQ Instrument Used YSI
ORP -64.4

Water Odors
☒ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other _____

Water Surface Oils
☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
☒ None ☐ Other _____

Turbidity (if not measured)
☐ Clear ☐ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other _____

SEDIMENT/ SUBSTRATE

Odors
☐ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☒ Anaerobic ☐ None
☐ Other _____

Oils ☒ Absent ☐ Slight ☐ Moderate ☐ Profuse
Some sulfide odor

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☐ Relict shells ☒ Other NONE

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☐ No N/A

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	50
Boulder	> 256 mm (10")	0			
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic (FPOM)	50
Gravel	2-64 mm (0.1"-2.5")	0			
Sand	0.06-2mm (gritty)	10	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	90			
Clay	< 0.004 mm (slick)	0			

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME So. Bi. Aberdeen	LOCATION IBSD-T-SD01
STATION # _____ RIVERMILE _____	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, Rosin, O'Neill (Le May)	
FORM COMPLETED BY Roberts	DATE 6/25/01 TIME 4:15 AM (PM)
REASON FOR SURVEY Trial Sampling ✓	

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover 16	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 (16)	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization 11	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE	20 19 18 17 16	15 14 13 12 (11)	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability 8	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 (8) 7 6	5 4 3 2 1 0
4. Sediment Deposition 10	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	(10) 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status 16	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 (16)	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

TTSD01

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration 18	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 (18) 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity 10	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	(10) 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 9 (LB)	Left Bank 10 (9)	8 7 6	5 4 3	2 1 0
SCORE 9 (RB)	Right Bank 10 (9)	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 9 (LB)	Left Bank 10 (9)	8 7 6	5 4 3	2 1 0
SCORE 9 (RB)	Right Bank 10 (9)	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 9 (LB)	Left Bank 10 (9)	8 7 6	5 4 3	2 1 0
SCORE 9 (RB)	Right Bank 10 (9)	8 7 6	5 4 3	2 1 0

Total Score 143

TTA003

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Ahtanum R/Upper Mystery	LOCATION IPSD-TTA003
STATION # TTA003 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, Rossi, O'Neill	
FORM COMPLETED BY Roberts	DATE 6/27/91 TIME 11:30 (AM) PM
REASON FOR SURVEY Triad sampling	

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	%cloud cover	☐ ___%
☒	clear/sunny	☒

Has there been a heavy rain in the last 7 days? ☐ Yes ☐ No

Showers 6/24

Air Temperature 75-80 °F

Other _____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

See map for UF02

STREAM CHARACTERIZATION

Stream Subsystem: ☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type: ☐ Coldwater ☒ Warmwater

Stream Origin: ☐ Glacial ☐ Non-glacial montane ☐ Swamp and bog ☐ Spring-fed ☐ Mixture of origins ☒ Other UFX

Catchment Area _____ km²

TTA003

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☐ Forest ☐ Commercial
☐ Field/Pasture ☐ Industrial
☐ Agricultural ☐ Other _____
☒ Residential

Local Watershed NPS Pollution
☐ No evidence ☒ Some potential sources
☐ Obvious sources Residential, Lawns Roads

Local Watershed Erosion
☐ None ☐ Moderate ☐ Heavy Possible - Slight

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
☒ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous

dominant species present Oaks, Dogwood

INSTREAM FEATURES

5' deep - WQ meas. 2" Above sediment

Estimated Reach Length _____ m
Estimated Stream Width _____ m
Sampling Reach Area 124 m²
Area in km² (m²x1000) _____ km²
Estimated Stream Depth 5' m
Surface Velocity (at thalweg) 0 m/sec Low flow

Canopy Cover
☐ Partly open ☐ Partly shaded ☐ Shaded Open

High Water Mark _____ m
level just below high mark (a few")

Proportion of Reach Represented by Stream Morphology Types
☐ Riffle _____ % ☐ Run _____ %
☒ Pool 100 %

Channelized ☐ Yes ☐ No
Dam Present ☐ Yes ☐ No

LARGE WOODY DEBRIS

LWD _____ m²
Density of LWD _____ m²/km² (LWD/ reach area) No

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae

dominant species present None

Portion of the reach with aquatic vegetation ____ % None

WATER QUALITY

Temperature 24.65 °C
Specific Conductance 477.00 µS/cm
Dissolved Oxygen 7.18 ppm
pH 7.54
Turbidity 6.4 NTU
WQ Instrument Used YSI
ORP -99.1

Water Odors
☒ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other _____

Water Surface Oils
☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
☒ None ☐ Other _____

Turbidity (if not measured)
☐ Clear ☐ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other _____

SEDIMENT/ SUBSTRATE

Odors
☐ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☒ Anaerobic ☐ None
☐ Other _____

Oils
☒ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☐ Relict shells ☐ Other None

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☐ No N/A

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	5%
Boulder	> 256 mm (10")	0			
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic (FPOM)	95%
Gravel	2-64 mm (0.1"-2.5")	0			
Sand	0.06-2mm (gritty)	0	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	100%			
Clay	< 0.004 mm (slick)	0			

Some leaf matter

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

Aberjona Outlet

STREAM NAME Upper Mystic Lake	LOCATION IPSD-TTA003
STATION # TTA003 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts	Rosin, O'Neil
FORM COMPLETED BY Roberts	DATE 6/29/01 TIME 11:30 (AM) PM — REASON FOR SURVEY Triad Sampling

See UFO2

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover 11 SCORE	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). 20 19 18 17 16	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). 15 14 13 12 (11)	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Pool Substrate Characterization 8 SCORE	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. 20 19 18 17 16	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present. 15 14 13 12 11	All mud or clay or sand bottom; little or no root mat, no submerged vegetation. 10 9 (8) 7 6	Hard-pan clay or bedrock; no root mat or vegetation. 5 4 3 2 1 0
3. Pool Variability N/A SCORE	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present. 20 19 18 17 16	Majority of pools large-deep; very few shallow. 15 14 13 12 11	Shallow pools much more prevalent than deep pools. 10 9 8 7 6	Majority of pools small-shallow or pools absent. 5 4 3 2 1 0
4. Sediment Deposition 3 SCORE	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition. 20 19 18 17 16	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools. 15 14 13 12 11	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. 10 9 8 7 6	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. 5 4 (3) 2 1 0
5. Channel Flow Status 16 SCORE	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. 20 19 (18) 17 16	Water fills >75% of the available channel; or <25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools. 5 4 3 2 1 0

TTA003

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration 12	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity 2	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) SCORE 4 (LB) SCORE 4 (RB)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream. SCORE 9 (LB) SCORE 9 (RB)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone) SCORE 5 (LB) SCORE 5 (RB)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
	Left Bank 10 9	8 7 6	5 4 3	2 1 0
	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 93

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Hall's Brook	LOCATION IPSD-TT04
STATION # SOTT04 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, O'Neill, Hoskins	
FORM COMPLETED BY Roberts	DATE 6/26 TIME 9:30 (AM) PM
REASON FOR SURVEY Trial Sampling	

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	%cloud cover	☒ 10 %
☒	clear/sunny	☐

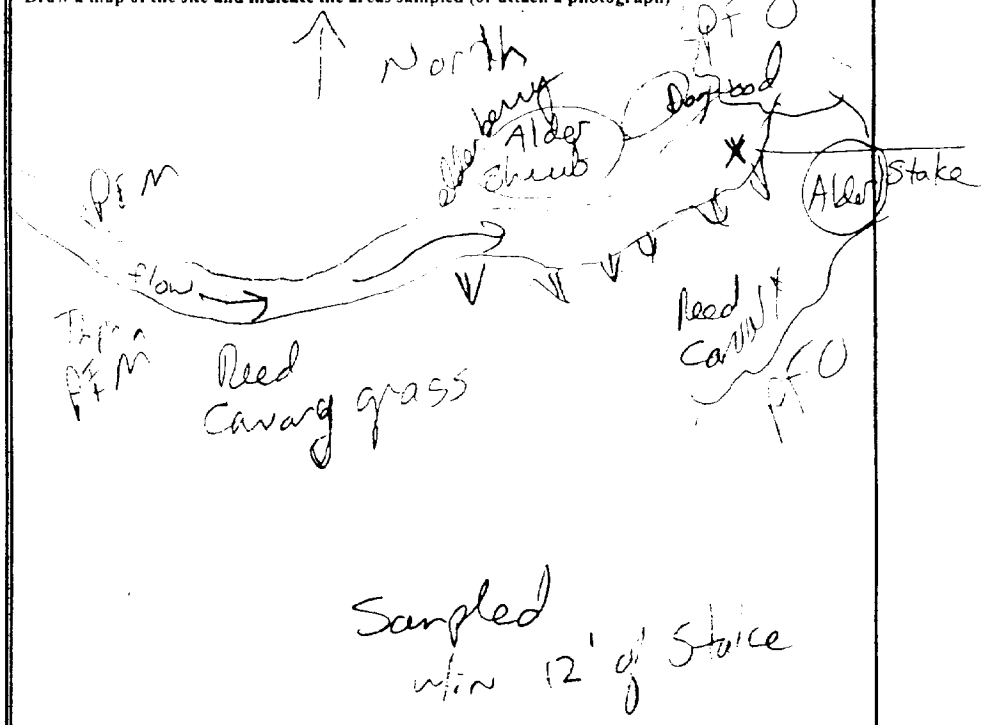
Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No Showers 6/24

Air Temperature 80°F

Other _____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)



STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☒ Warmwater

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☒ Mixture of origins
☒ Other Dam

Catchment Area _____ km²

TT04

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
- [x] Forest
- [ ] Commercial
- [ ] Field/Pasture
- [ ] Industrial
- [ ] Agricultural
- [ ] Other _____
- [x] Residential

Local Watershed NPS Pollution
- [x] No evidence
- [ ] Some potential sources
- [ ] Obvious sources

Local Watershed Erosion
- [x] None
- [ ] Moderate
- [ ] Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
- [x] Trees
- [x] Shrubs
- [x] Grasses
- [ ] Herbaceous

dominant species present: red maple, speckled alder, reed canary grass

INSTREAM FEATURES

centered channel 1.3-1.6ft

Estimated Reach Length ~~_____ m~~

Estimated Stream Width 5 ft/m

Sampling Reach Area 12 ft² ~~m²~~

Area in km² (m²x1000) ~~_____ km²~~

Estimated Stream Depth 0.3-.5 ft ~~m~~

Surface Velocity _____ m/sec (at thalweg) Noticeable, slow flow

Canopy Cover
- [ ] Partly open
- [x] Partly shaded
- [ ] Shaded

High Water Mark ~~_____ m~~ water level mark

Proportion of Reach Represented by Stream Morphology Types
- [ ] Riffle _____ %
- [ ] Run _____ %
- [x] Pool 100 %

Channelized [ ] Yes [ ] No

Dam Present [ ] Yes [ ] No

pond at outlet, pool @ 5ft

LARGE WOODY DEBRIS

LWD _____ m² <5% sticks, fresh

Density of LWD _____ m³/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
- [x] Rooted emergent
- [ ] Rooted submergent
- [ ] Rooted floating
- [ ] Free floating
- [ ] Floating Algae
- [ ] Attached Algae

dominant species present: reed canary grass

Portion of the reach with aquatic vegetation _____ %

WATER QUALITY

Temperature 20.62 °C

Specific Conductance 405.0 µS/cm

Dissolved Oxygen 5.90 ppm

pH 7.46

Turbidity 6.1 NTU

WQ Instrument Used YSI ORP -55.4

Water Odors
- [x] Normal/None
- [ ] Sewage
- [ ] Petroleum
- [ ] Chemical
- [ ] Fishy
- [ ] Other _____

Water Surface Oils
- [ ] Slick
- [ ] Sheen
- [ ] Globs
- [ ] Flecks
- [x] None
- [ ] Other _____

Turbidity (if not measured)
- [ ] Clear
- [ ] Slightly turbid
- [ ] Turbid
- [ ] Opaque
- [ ] Stained
- [ ] Other _____

SEDIMENT/ SUBSTRATE

Odors
- [ ] Normal
- [ ] Sewage
- [ ] Petroleum
- [ ] Chemical
- [x] Anaerobic
- [ ] None
- [ ] Other dredge anaerobic

Others odorless

Oils
- [x] Absent
- [ ] Slight
- [ ] Moderate
- [ ] Profuse

Deposits
- [ ] Sludge
- [ ] Sawdust
- [ ] Paper fiber
- [ ] Sand
- [ ] Relict shells
- [ ] Other none

Looking at stones which are not deeply embedded, are the undersides black in color?
- [ ] Yes
- [ ] No
- N/A

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	15
Boulder	> 256 mm (10")	0			
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic (FPOM)	85
Gravel	2-64 mm (0.1"-2.5")	0			
Sand	0.06-2mm (gritty)	20%	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	80%			
Clay	< 0.004 mm (slick)	0			

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME Hall's Brook	LOCATION IPSD-TT04
STATION # SOTT04 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, Hosking O'Neill	
FORM COMPLETED BY Roberts	DATE 6/26 TIME 9:30 (AM) PM
REASON FOR SURVEY Triad Sampling	

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover 13 SCORE	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). 20 19 18 17 16	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). 15 14 13 12 11	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Pool Substrate Characterization 14 SCORE	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. 20 19 18 17 16	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present. 15 14 13 12 11	All mud or clay or sand bottom; little or no root mat; no submerged vegetation. 10 9 8 7 6	Hard-pan clay or bedrock; no root mat or vegetation. 5 4 3 2 1 0
3. Pool Variability 6 SCORE	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present. 20 19 18 17 16	Majority of pools large-deep; very few shallow. 15 14 13 12 11	Shallow pools much more prevalent than deep pools. 10 9 8 7 6	Majority of pools small-shallow or pools absent. 5 4 3 2 1 0
4. Sediment Deposition 8 SCORE	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition. 20 19 18 17 16	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools. 15 14 13 12 11	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. 10 9 8 7 6	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. 5 4 3 2 1 0
5. Channel Flow Status 19 SCORE	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. 20 19 18 17 16	Water fills >75% of the available channel; or <25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools. 5 4 3 2 1 0

recent rains, high water level
high precip in June

TT04

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration 19	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 (19) 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity 10	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length ~~1 to~~ 2 times longer than if it was in a straight line. 2 to 3	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight, waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	(10) 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) SCORE 10 (LB) SCORE 10 (RB)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
Left Bank	(10) 9	8 7 6	5 4 3	2 1 0
Right Bank	(10) 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream. SCORE 10 (LB) SCORE 10 (RB)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Left Bank	(10) 9	8 7 6	5 4 3	2 1 0
Right Bank	(10) 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone) SCORE 10 (LB) SCORE 10 (RB)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Left Bank	(10) 9	8 7 6	5 4 3	2 1 0
Right Bank	(10) 9	8 7 6	5 4 3	2 1 0

Total Score 149

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Upper Mystic Lake	LOCATION Upper footway IPSD-TTUF02	
STATION # TTUF02 RIVERMILE	STREAM CLASS	
LAT _____ LONG _____	RIVER BASIN	
STORET #	AGENCY	
INVESTIGATORS Roberts, O'Neill, Rosin		
FORM COMPLETED BY Roberts	DATE 6/27/01 TIME 9:30 (AM) PM	REASON FOR SURVEY Triad Survey

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	%cloud cover	☐ ___%
☒	clear/sunny	☒

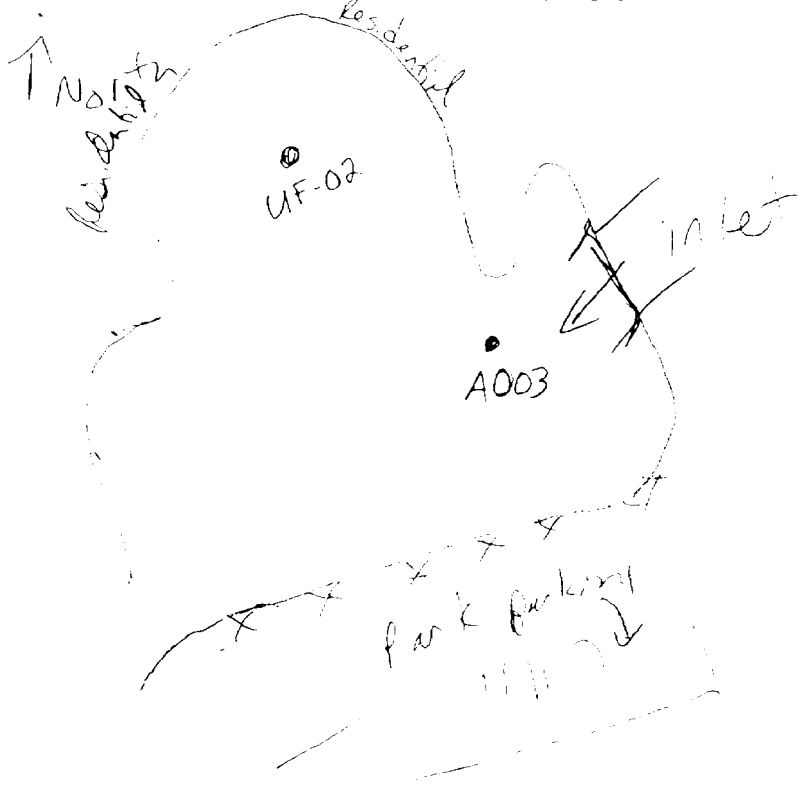
Has there been a heavy rain in the last 7 days? ☐ Yes ☐ No showers 6/24

Air Temperature 75 °F

Other light breeze

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)



STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☒ Warmwater

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☐ Mixture of origins
☐ Other Unknown

Catchment Area _____ km²

TTUF02

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☐ Forest ☐ Commercial
☐ Field/Pasture ☐ Industrial
☐ Agricultural ☐ Other _____
☒ Residential

Local Watershed NPS Pollution
☐ No evidence ☒ Some potential sources
☐ Obvious sources lawns, driveways, roadways

Local Watershed Erosion
☒ None ☐ Moderate ☐ Heavy
Slight

RIPARIAN VEGETATION (18 meter buffer)
eastshore

Indicate the dominant type and record the dominant species present
☒ Trees ☒ Shrubs ☒ Grasses ☐ Herbaceous
dominant species present Silver maple, buckthorn, mowed grass

west: scrub forest / lawn

INSTREAM FEATURES
9 grabs

Estimated Reach Length ____ m
Estimated Stream Width ____ m
Sampling Reach Area 10 ft²
Area in km² (m²x1000) ____ km²
Estimated Stream Depth 7.1 ft
Surface Velocity 0 m/sec (at thalweg) No flow

Canopy Cover
☐ Partly open ☐ Partly shaded ☐ Shaded open

High Water Mark: ____ m
water just below high mark

Proportion of Reach Represented by Stream Morphology Types
☐ Riffle ____ % ☐ Run ____ %
☒ Pool 100 %

Channelized ☐ Yes ☒ No
Dam Present ☒ Yes ☐ No downstream

LARGE WOODY DEBRIS

LWD ____ m² NONE
Density of LWD 0 m²/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae

dominant species present none in sample area

Portion of the reach with aquatic vegetation 0 % Lilies N 2m away

WATER QUALITY
@ 6'

Temperature 22.19 °C
Specific Conductance 369.00 µS/cm
Dissolved Oxygen 2.57 ppm
pH 7.34
Turbidity 6.7 NTU
WQ Instrument Used YSI
ORP - 90.6

Water Odors
☒ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other _____

Water Surface Oils
☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
☒ None ☐ Other _____

Turbidity (if not measured)
☐ Clear ☐ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other _____

SEDIMENT/ SUBSTRATE

Odors
☐ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☒ Anaerobic ☐ None
☐ Other _____

Oils
☒ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☐ Relict shells ☐ Other None

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☐ No N/A

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	5%
Boulder	> 256 mm (10")	0			
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic (FPOM)	95%
Gravel	2-64 mm (0.1"-2.5")	0			
Sand	0.06-2mm (gritty)	0	Marl	grey, shell fragments	—
Silt	0.004-0.06 mm	100%			
Clay	< 0.004 mm (slick)	0			

Surveyor, cormorant

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME Upper Mistake Creek	LOCATION Upstream of IPSD-TTUF02
STATION # TTUF02 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, O'Neill, Rosier	
FORM COMPLETED BY Roberts	DATE 6/27/01 TIME 9:30 (AM) PM
REASON FOR SURVEY Triad Sampling	

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover 11	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed ← NO	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization 8	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability N/A	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition 3	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; ~~pools almost absent due to substantial sediment deposition.~~
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status 18	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

All mud

pool

TTUF02

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration 12	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity 2	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 7 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 8 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 8 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 7 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 5 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 5 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Sea wall on Shore Jam down Stream

Total Score 95

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

STREAM NAME Judkins Pond	LOCATION IPSD-TT0603
STATION # TT0603 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, Haskins, O'Neill	
FORM COMPLETED BY Roberts	DATE 7/26/01 TIME 3pm AM PM
REASON FOR SURVEY Triad Sampling	

WEATHER CONDITIONS

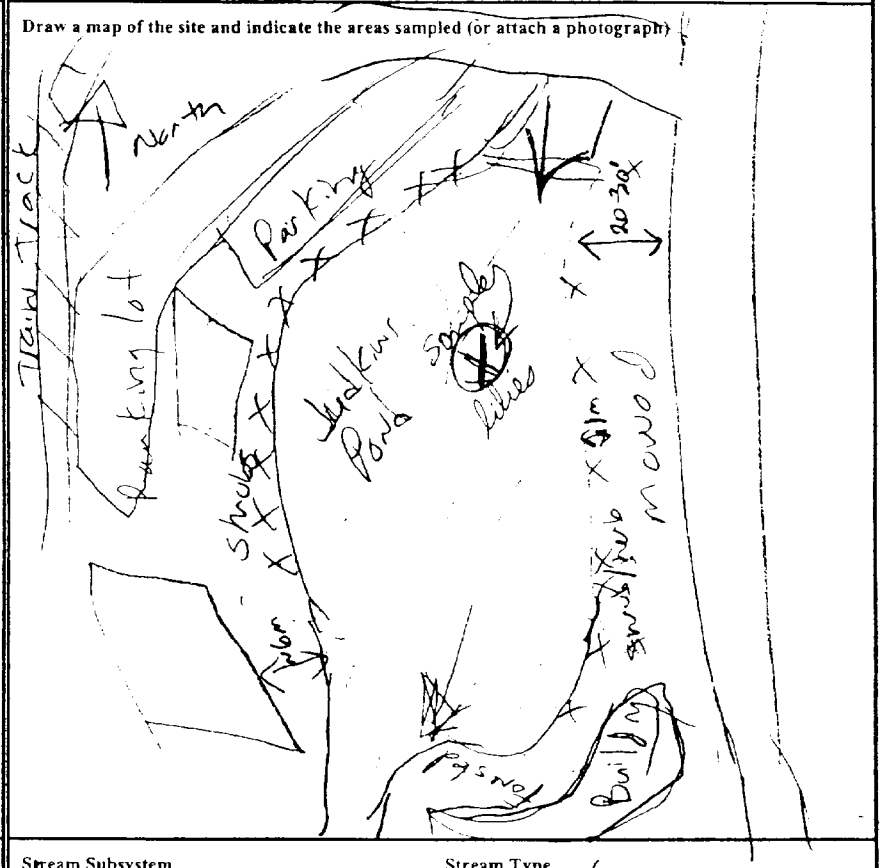
Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	%cloud cover	☒ ___%
☒	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☐ No
Showers 8/24
Air Temperature 98° C
Other _____

SITE LOCATION/MAP

Sampled around edge 1:14 pads

Draw a map of the site and indicate the areas sampled (or attach a photograph)



STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☒ Warmwater

Stream Origin
☐ Glacial ☐ Spring-fed
☐ Non-glacial montane ☐ Mixture of origins
☐ Swamp and bog ☒ Other Unk

Catchment Area _____ km²

TT0603

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☐ Forest ☒ Commercial
☐ Field/Pasture ☐ Industrial
☐ Agricultural ☐ Other roads
☐ Residential

Local Watershed NPS Pollution
☐ No evidence ☒ Some potential sources
☐ Obvious sources road/stormwater

Local Watershed Erosion
☐ None ☒ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
☒ Trees ☐ Shrubs ☒ Grasses ☒ Herbaceous
dominant species present cottonwood, dogwood, loosestrife, mowed grass

INSTREAM FEATURES

Estimated Reach Length ____ m
Estimated Stream Width 250' m
Sampling Reach Area 12ft² m²
Area in km² (m²x1000) ____ km²
Estimated Stream Depth 3.5-4 ft m
Surface Velocity 0 m/sec (at thalweg) standing water

Canopy Cover
☐ Partly open ☐ Partly shaded ☐ Shaded ☒ Open

High Water Mark ____ m
water level high
Proportion of Reach Represented by Stream Morphology Types
☐ Riffle ____ % ☐ Run ____ %
☒ Pool 100 %

Channelized ☐ Yes ☒ No only at outlet
Dam Present ☐ Yes ☒ No dam at Mill Pond

LARGE WOODY DEBRIS

LWD 590 m² large sticks in dredge
Density of LWD ____ m²/km² (LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☒ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae
dominant species present Spadderdock (Nuphar lutea)
Portion of the reach with aquatic vegetation ____ %

WATER QUALITY

WQ meas. 3.5 ft deep
meas @ 3.2 ft

Temperature 24.7 °C
Specific Conductance 492.00 µS/cm
Dissolved Oxygen 7.67 ppm
pH 7.45
Turbidity 16.1 NTU
WQ Instrument Used YSI
ORP -78.5

Water Odors
☒ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other ____

Water Surface Oils
☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
☒ None ☐ Other ____

Turbidity (if not measured)
☐ Clear ☐ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other ____

SEDIMENT/ SUBSTRATE

Odors
☒ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other ____

Oils
☒ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☐ Relict shells ☒ Other plastic debris

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☐ No N/A

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	<10%
Boulder	> 256 mm (10")	0			
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic (FPOM)	90% many fine roots
Gravel	2-64 mm (0.1"-2.5")	0			
Sand	0.06-2mm (gritty)	20	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	80			
Clay	< 0.004 mm (slick)	0			

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

STREAM NAME Tidkins Pond	LOCATION IPSD - TT0603
STATION # TT0603 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, Hakins, O'Neill	
FORM COMPLETED BY Roberts	DATE 6/26/01 TIME 2:30 AM (PM)
	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover 11 SCORE	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). 20 19 18 17 16	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). 15 14 13 12 (11)	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Pool Substrate Characterization 8 SCORE	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. 20 19 18 17 16	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present. 15 14 13 12 11	All mud or clay or sand bottom; little or no root mat; no submerged vegetation. 10 9 (8) 7 6	Hard-pan clay or bedrock; no root mat or vegetation. 5 4 3 2 1 0
3. Pool Variability N/A SCORE	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present. 20 19 18 17 16	Majority of pools large-deep; very few shallow. 15 14 13 12 11	Shallow pools much more prevalent than deep pools. 10 9 8 7 6	Majority of pools small-shallow or pools absent. 5 4 3 2 1 0
4. Sediment Deposition 2 SCORE	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition. 20 19 18 17 16	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools. 15 14 13 12 11	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. 10 9 8 7 6	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. 5 4 3 (2) 1 0
5. Channel Flow Status 20 SCORE	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. (20) 19 18 17 16	Water fills >75% of the available channel; or <25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools. 5 4 3 2 1 0

pond

TT0603

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 7 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 7 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 5 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 5 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 1 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 1 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 94

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (FRONT)

Ref Wetland

STREAM NAME Hall's Brook	LOCATION IPSD-HB00
STATION # IPSDHBAR RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, O'Neill, Hoskins	
FORM COMPLETED BY Roberts	DATE 6/26/01 TIME 11:50 (AM) PM
REASON FOR SURVEY Triad Sampling	

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	%cloud cover	☐ ___%
☒	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No showers 6/24

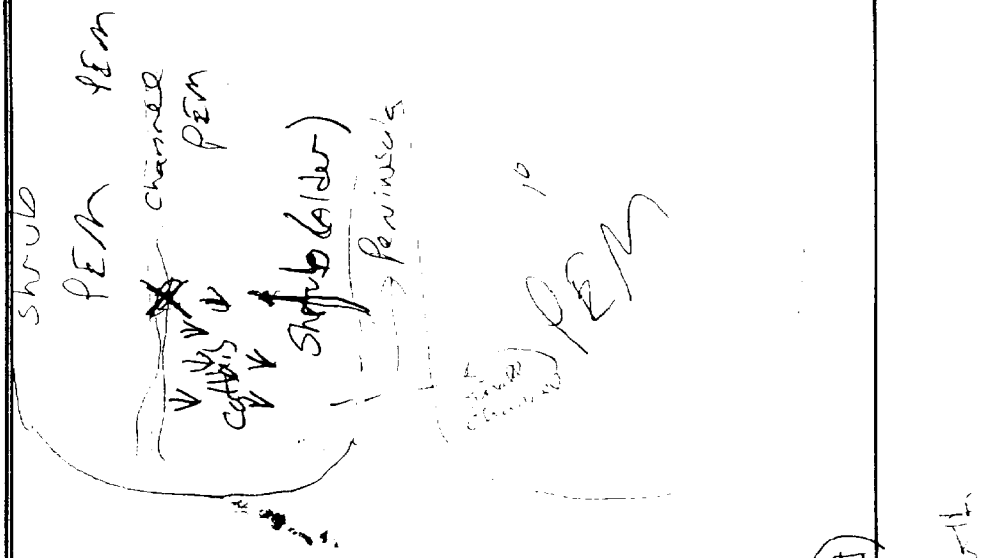
Air Temperature 90 °C

Other _____

SITE LOCATION/MAP

Draw a map of the site and indicate the areas sampled (or attach a photograph)

Accel from Danforth Street



STREAM CHARACTERIZATION

Stream Subsystem
☒ Perennial ☐ Intermittent ☐ Tidal

Stream Type
☐ Coldwater ☒ Warmwater

Stream Origin
☐ Glacial
☐ Non-glacial montane
☐ Swamp and bog
☐ Spring-fed
☐ Mixture of origins
☒ Other UAKnown

Catchment Area _____ km²

HB00

PHYSICAL CHARACTERIZATION/WATER QUALITY FIELD DATA SHEET (BACK)

WATERSHED FEATURES

Predominant Surrounding Landuse
☒ Forest ☐ Commercial
☐ Field/Pasture ☐ Industrial
☐ Agricultural ☐ Other _____
☒ Residential

Local Watershed NPS Pollution
☒ No evidence ☐ Some potential sources
☐ Obvious sources

Local Watershed Erosion
☒ None ☐ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present
☒ Trees ☒ Shrubs ☐ Grasses ☒ Herbaceous
dominant species present Red maple, speckled alder, cattails

INSTREAM FEATURES

Estimated Reach Length _____ m
Estimated Stream Width 31 m
Sampling Reach Area 868 m²
Area in km² (m²x1000) _____ km²
Estimated Stream Depth 0.5-1.0'
Surface Velocity _____ m/sec
(at thalweg) low but detectable flow

Canopy Cover
☐ Partly open ☐ Partly shaded ☐ Shaded open

High Water Mark _____ m
water level high

Proportion of Reach Represented by Stream Morphology Types
☐ Riffle _____ % ☐ Run _____ %
☒ Pool 100 %

Channelized ☐ Yes ☒ No
Dam Present ☐ Yes ☒ No

LARGE WOODY DEBRIS

LWD _____ m² 10% Branches in channel.
Density of LWD _____ m²/km² (LWD/reach area)

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating
☐ Floating Algae ☐ Attached Algae

dominant species present not in channel, borders: cattails
Portion of the reach with aquatic vegetation 0 % duckweed

WATER QUALITY

Temperature 24.6 C
Specific Conductance 341.00
Dissolved Oxygen 6.92
pH 7.01
Turbidity 12.5
WQ Instrument Used YSI
alt - 72.7

Water Odors
☒ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other _____

Water Surface Oils
☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
☒ None ☐ Other _____

Turbidity (if not measured)
☐ Clear ☐ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other _____

SEDIMENT/ SUBSTRATE

Odors
☒ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☒ None
☐ Other _____

Oils
☒ Absent ☐ Slight ☐ Moderate ☐ Profuse

Deposits
☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand
☐ Relict shells ☒ Other none

Looking at stones which are not deeply embedded, are the undersides black in color?
☐ Yes ☐ No N/A

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)		
Substrate Type	**Diameter**	**% Composition in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Area**
Bedrock		0	Detritus	sticks, wood, coarse plant materials (CPOM)	40%
Boulder	> 256 mm (10")	0			
Cobble	64-256 mm (2.5"-10")	0	Muck-Mud	black, very fine organic (FPOM)	60%
Gravel	2-64 mm (0.1"-2.5")	0			
Sand	0.06-2mm (gritty)	0	Marl	grey, shell fragments	0
Silt	0.004-0.06 mm	100%			
Clay	< 0.004 mm (slick)	0			

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

wetland ref

STREAM NAME Hall's Brook	LOCATION IPSD-HB00
STATION # HB00 RIVERMILE	STREAM CLASS
LAT _____ LONG _____	RIVER BASIN
STORET #	AGENCY
INVESTIGATORS Roberts, O'Neill, Haskins	
FORM COMPLETED BY Roberts	DATE 6/26/01 TIME 1155 (AM) PM
REASON FOR SURVEY Triad sampling	

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover 15 SCORE	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient). 20 19 18 17 16	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). 15 14 13 12 11	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Pool Substrate Characterization 10 SCORE	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. 20 19 18 17 16	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present. 15 14 13 12 11	All mud or clay or sand bottom; little or no root mat; no submerged vegetation. 10 9 8 7 6	Hard-pan clay or bedrock; no root mat or vegetation. 5 4 3 2 1 0
3. Pool Variability 3 SCORE	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present. 20 19 18 17 16	Majority of pools large-deep; very few shallow. 15 14 13 12 11	Shallow pools much more prevalent than deep pools. 10 9 8 7 6	Majority of pools small-shallow or pools absent. 5 4 3 2 1 0
4. Sediment Deposition 5 SCORE	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition. 20 19 18 17 16	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools. 15 14 13 12 11	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. 10 9 8 7 6	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. 5 4 3 2 1 0
5. Channel Flow Status 20 SCORE	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. 20 19 18 17 16	Water fills >75% of the available channel; or <25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools. 5 4 3 2 1 0

150% mud max? snags sticks CPOM

mud some POC

all shallows emerge

high stage

+1800

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration 1 20	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	(20) 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity 8 N/A	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length ~~1 to 2~~ times longer than if it was in a straight line. 2-3	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 (8) 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 10 (LB)	Left Bank (10) 9	8 7 6	5 4 3	2 1 0
SCORE 10 (RB)	Right Bank (10) 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 10 (LB)	Left Bank (10) 9	8 7 6	5 4 3	2 1 0
SCORE 10 (RB)	Right Bank (10) 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 10 (LB)	Left Bank (10) 9	8 7 6	5 4 3	2 1 0
SCORE 9 (RB)	Right Bank (10) 9	8 7 6	5 4 3	2 1 0

Total Score 133

Attachment 1

FIELD NOTES FOR JUNE 2001 WELLS G&H TRIAD SAMPLING

The following field notes were compiles in order to detail the sampling activities in support of the triad sampling at Wells G&H between June 18 and June 27, 2001. These notes are organized in chronological order. Physical Characterization and Habitat Assessment Field Data Sheets for each of these locations were also completed for each station.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location:IP-SD-WH-07
Date: June 18, 2001
Time: 11:10 am
Weather: Sunny, 80°F, light breeze

Sampling team met at the MA Rifle Association parking log, at the end of Rifle Range Road in Woburn, at 9:15 am. The first station sampled, west of the rifle range, was the TTNUS sample location WH07. The station is located at the edge of the red maple swamp along the eastern border of the Well G& H 23-acre wetland. There had been heavy rains (estimated at 2.5 inches) in the last 24-hours. Water levels in the wetland were high for June due to this rain event, as evidenced by the depth of water around emergent vegetation including sensitive ferns. The site appears to be a seasonally inundated palustrine forested wetland. The open emergent marsh, dominated by common reed (*Phragmites australis*) is located approximately 50 ft to the west.

The sediment samples were collected in 1.2 ft of water, just west of the WH07 stake. The sediment was dark muck with a high content of coarse particulate organic matter. The three samples sieved for benthic community analysis were composed predominantly of leaf litter. A layer of moss was present floating just above the sediment surface. There was no observable flow of water at the site.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SDTT-22-01
Date: June 18, 2001
Time: 3:30 pm
Weather: Sunny, 85°F, light breeze

Station SDTT 22-01 was access through the northern fence of the Rifle Association property. The former stake marking TTNUS's sampling location was located. The area in the vicinity of the sample site is a palustrine forested wetland, dominated by red maple (*Acer rubrum*), swamp azalea (*Rhododendron viscosum*), and skunk cabbage (*Symplocarpus foetidus*).

The sample was collected within a small channel (2 ft wide) with slow, but detectable flow, through the red maple swamp. The banks were densely vegetated with maples, shrubs, and a herb layer dominated by skunk cabbage, cinnamon fern (*Osmunda cinnamomea*), jewelweed (*Impatiens capensis*) and lurid sedge (*Carex lurida*). In the channel itself, emergent and submersed aquatic vegetation was absent. The sediment was composed of dark highly organic muck with a high content of coarse particulate organic matter. In the samples sieved for benthic

community analysis, small beads, presumed to be lead shot from historic rifle range activity were found. The access road, which parallels the wetland to the east was covered in buck shot.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SDTT-12-03
Date: June 19, 2001
Time: 9:30 am
Weather: Sunny, 80°F, light breeze

Station SD 12-03 along the secondary channel of the Aberjona River near Well H in the 23-acre wetland. This location was characterized as a stream habitat and was collected in a depositional area of a side channel along the edge of the emergent marsh. The marsh vegetation was dominated by narrow-leaved cattail (*Typha angustifolia*), purple loosestrife (*Lythrum salicaria*) and tussock sedge. A few shrubs adjacent to the sampling location included button-bush and elderberry (*Sambucus canadensis*), although the area was generally open emergent marsh.

The sediment was composed of dark organic muck, with a high proportion of coarse particulate organic matter consisting mainly of cattail fragments. The main channel of the stream at this location was approximately 5-8 feet wide with moderate flow and 4 ft deep at the center. The small side channel where the sample was collected was 0.8 to 1.2 feet deep. The emergent marsh adjacent to the sample area is covered in dense vegetation and pockets of water.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SDTT29-03
Date: June 19, 2001
Time: 11:50 am
Weather: Sunny, 85°F, light breeze

SDTT-29-03 is south of Well H on the east branch of the river within the 23-acre wetland. This location was characterized as a stream habitat, and was collected adjacent to a small inlet in the wetland which forms a pool bordered by emergent wetland. The stream channel is distinct, deeper and wider than at SD-12-03. There is no canopy and few shrubs. The wetland vegetation is dominated by tussock sedge (*Carex stricta*), purple loosestrife and some cattails. The sediment was collected at a depth of 0.8 to 1.2 feet of water. The sediment was composed of dark organic muck with fine roots and slightly less undecomposed cattail fragments.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SDTT-19-01
Date: June 19, 2001
Time: 2:30 pm
Weather: Sunny, 90°F, light breeze

Station SD19-01 is in the 23-acre wetland west of Well G. This wetland sediment sample was

located in a isolated pocket or channel in the emergent wetland among tussock sedge. This open channel in the emergent wetland is not directly connected to the main channel of the river. The sediment samples were collected at a depth of 0.8 feet. Sediment consisted of dark organic muck with a higher content of fine particulate organic matter. Some orange floc was noted on the surface of the sediment. There was no tree or shrub cover. A dense stand of *Phragmites* is located to the north, but in the vicinity of the sample, the vegetation was primarily sedges. The original Foster-Wheeler sample was taken near this location. The M&E (1997) sample was collected closer to the forested wetland to the east.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-TT33-02
Date: June 20, 2001
Time: 11:20 am
Weather: Sunny, 80°F, light breeze

Sample site TT33-02 is just off the main channel of the Aberjona River near the southern end of the former Cranberry Bog, south of Salem Street. This wetland habitat was located along a minor side channel (east-west). The substrate was difficult to sample with the dredge because of the fibrous roots and particulate organic matter. The sediment was black organic muck with a higher sand component than many of the wetland samples. The dominant vegetation in the vicinity of the sample station included tussock sedge and purple loosestrife. The emergent marsh was mainly open in this area, but a few shrubs, mainly silky dogwood (*Cornus amomum*) were located adjacent to the sample location.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-TT32-02
Date: June 20, 2001
Time: 2:00 pm
Weather: Sunny, 90°F, light breeze

Sample station TT32-02 was also located within the former Cranberry Bog, north of TT33-02. The station was very similar in character to the wetland sample collected at TT33-02. The sediment was collected at the mouth of one of the small side channels to the main stream. There was almost no flow in the channel and the sediment was collected in a depositional area 0.4-0.8 ft of water depth. The vegetation bordering the sampling location was dominated by emergent, hummock-forming grass, and purple loosestrife. The sediment consisted of organic muck and some sand. The organic content and fine root fraction was also high, making dredging difficult. The dredge pressed in 6 inches into the substrate and frequently recovered only 2-3 inches of material for the chemistry and toxicity samples.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-WW-06
Date: June 21, 2001
Time: 8:55 am
Weather: Cloudy, 70°F, light breeze

Station WW-06 is located along the eastern edge of the Wildwood Property. The station is at the out edge of the narrow forested wetland that borders the gravel cap for the treatment system at Wildwood. The sample was collected among clumps of emergent wetland plants including sensitive fern (*Onoclea sensibilis*) and purple loosestrife. The location is partially shaded by red maple trees and a few shrubs (norther arrowwood) were located adjacent to the sampling area.

The sediment was black organic sediment with many fine roots and cohesive structure. In order to get a sample, the jaws of the dredge had to be manually pushed closed. Water depth was 0.5 - 1.0 feet. The area appears to be a seasonally inundated location.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-TT-18-02
Date: June 21, 2001
Time: 2:30 pm
Weather: Cloudy, 75°F, light breeze

The sample station was located on the east side of the Aberjona River and determined by the GPS co-ordinates for SD-18-02 recorded by M&E. The station was accessed by launching a boat from Wildwood. The location is a small inlet along the main river channel. The vegetation along the bank was dominated by tussock sedge and purple loosestrife. The banks of the stream are emergent marsh with a few red maple saplings present. The sediment was black organic muck, with a high content of fine particulate organic matter. Samples were collected in water 1.1 ft deep.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SDTT-10-02
Date: June 22, 2001
Time: 8:45 am
Weather: Cloudy, 75°F, light breeze

Sampling location SD-10-02 is located on the Aberjona River, just upstream of the bridge at Salem Street. This location is at the southern end of the 23-acre wetland and upstream of the Cranberry bog. Access was obtained through the backyard of a residence on Salem street to the west. A boat was used to collect the sample. GPS was used to locate the M&E co-ordinates for SD-10-03. This area is a wide point in the river with slow flow. The sample was collected in 1.4 feet of water at the northeast edge of a patch of water lilies (*Nuphar luteum*). The sediment was composed of black organic muck with a high content of coarse particulate organic matter. The

riparian vegetative zone was limited on the western bank to a narrow shrub/tree border sloping up to a mowed residential lawn. The remainder of the surrounding banks were dominated by emergent vegetation including cattails and purple loosestrife.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SDTT-13-01
Date: June 22, 2001
Time: 10:45 am
Weather: Cloudy, 70°F, light breeze

The location of the stake for station SD13-01 (Foster Wheeler) was determined with GPS co-ordinates. The location of the former SD13-01 was in an area of a scoured channel at the western edge of the 23-acre wetland, north of Wildwood. The area was inundated with water, but a location about 15 feet to the east was selected to sample. This location was a small channel into the adjacent to the emergent wetland. The sample was collected in the open water, 0.3 - 0.4 feet deep, adjacent to clumps of purple loosestrife and jewelweed

The western bank, about 100 feet from the railroad tracks, consisted of a disturbed forest, dominated by oak. Shrubs, including northern arrowwood (*Viburnum recognitum*), were prevalent along the bank. The open water channel was about 20 feet wide and up to 2 feet deep. The sediment consisted of black organic muck, with some of the dredge samples with a higher content of peaty material.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-TT30-01
Date: June 22, 2001
Time: 1:20 pm
Weather: Partly cloudy, 75°F

The sample was collected in a very small inlet on the east side of the stream channel south of Salem Street. The station was accessed from a parking lot off the south side of Salem Street. There was moderate flow in the channel and slow flow at the sampling location behind a small clump of purple loosestrife. The western shoreline was a narrow band of forest including willow, red maple and gray birch . The sample was collected in an open are of emergent marsh dominated by purple loosestrife, tussock sedge and sensitive fern at a depth of 3-10 inches. The sediment was composed of back organic muck, fibrous roots, and some peat.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SD-PP03
Date: June 25, 2001
Time: 10:10 am
Weather: Partly cloudy, 76°F

Phillips Pond was a reference location located on the South Branch of the Aberjona River between Commercial Way and Route 93. Access was obtained from road behind the Marshall's loading docks. The pond was sampled using an Ekman dredge from a boat. Station IPSD03 is located off the southern shore about halfway up the pond. The sediment was collected at a depth of about 13 feet. Soft black organic muck was collected at the location determined from GPS co-ordinates provided in Menzie-Cura's data. While anchored at the same location, in some areas there was little recovery in the dredge and it felt like it was hitting hard bottom.

The pond was create in the mid-1970's. There is an active beaver dam at the outlet, and the water levels appeared to be quite high. The bordering vegetated buffer is a narrow forest (red maple gray birch, glossy buckthorn (*Rhamnus frangula*) and dogwood), with the exception of the west side, with is *Phragmites* and a bank up to the roadway. Beaver activity, muskrat and Great Blue Heron were observed at the pond. Ken Munney reported that a large number of bass were collected from this pond during the fish sampling.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SD-TTSA01
Date: June 25, 2001
Time: 2:00 pm
Weather: Mostly sunny, 85°F

A new wetland reference station was selected in the Town of Reading, at the end of Arcadia Road. The station is located off the north side of the cul-de-sac at the edge of the forested wetland in a small open channel (no flow) in the emergent wetland. At the time of sampling the water depth was 0.7 ft. At the sampling location there was no canopy cover, however, to the south and west (upstream), a mix of shrub and forested wetland was dominated by red maple, and northern arrowwood. Vegetation at the TTSA01 included broad-leaved cattail, skunk cabbage, jewel weed, purple loosestrife and sensitive fern. This vegetative community was characteristic of the emergent marsh along the edges of the open channel in the wetland where the sample was taken. There was no rooted aquatic vegetation where the sediment was collected. The sediment consisted of black organic muck, on top of a sandier layer. There was a fairly high content of coarse particulate organic matter in the samples.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-TTSD01
Date: June 25, 2001
Time: 4:00 pm
Weather: Mostly sunny, 85°F

TTSD01 is a stream reference location on the South Branch of the Aberjona River. The station is located behind residences on Willow Street in Reading. Access to the site was obtained through the back yard of #118 Willow Road. The stream is 8-10 feet wide, with forested wetland along the east bank and emergent/shrub wetland along the west bank. Shrubs along both banks included

silky dogwood and glossy buckthorn. Trees were predominately red maple. Along the banks, the dominant herbaceous species included jewelweed and sensitive fern.

The substrate on west side of the stream channel was scoured and sandy. The sample was collected in the depositional area on the east side of the channel. The sediment was black organic muck, with some sand, and a high content of coarse organic matter. There were numerous sticks and woody debris. A few rooted macrophytes (*Ludwigia palustris*) were observed in the area of the sample collection.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-TT04
Date: 6/26/01
Time: 9:30 am
Weather: Sunny, 85°F

This station was a reference stream location, on Hall's Brook accessed from a dead-end street (Third Road). This station was used by Menzie-Cura for a reference stream for the Industri-Plex triad sampling. There is a distinct stream channel present through a wide emergent marsh dominated by reed canary grass. The sample was taken on the western end of the marsh in an area where the stream is bordered by a few shrubs and then flows into a forested wetland.

The sediment was collected along the reed-canary grass bank and consisted of a black organic muck. The substrate toward the center of the channel (not sampled) was sandy. Dogwood, speckled alder (*Alnus rugosa*) and elderberry were present along the northern bank. Other emergent wetland species present in the area included purple loosestrife and broad-leaved cattail (*Typha latifolia*).

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-HB00
Date: June 26, 01
Time: 11:50 am
Weather: Sunny, 90°F

This reference wetland, along Hall's Brook, was accessed from a dead-end street (Danforth) off of School Street in Woburn. The wetland was reached by going down a steep bank from the residential area and west along the bank, out to a peninsula that runs north into the wetland. The station is on the west side of the wetland adjacent to an scrub/shrub wetland dominated by speckled alder. The sample was taken in a channel in the wetland with no flow, among cattails. The water depth at the sampling location was 0.5 to 1.0 feet. The sediment was deep (approximately 2 ft) dark organic muck with coarse organic matter. The was duckweed (*Lemna* sp.) on the surface of the water among the cattails, and other emergent vegetation included purple loosestrife and for-get-me-nots (*Myosotis scorpoides*).

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Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SD-TT06-03
Date: June 26, 2001
Time: 3:00 pm
Weather: Sunny, 90°F

The sample location for Judkins Pond was located using co-ordinates for the M&E SD-06-03 station. Judkins Pond is a small pond in the center of Winchester. The sampling location is on the east side of the pond near a patch of water lilies (*Nuphar luteum*). The sample was collected at a depth of 3.5 - 4 feet. The sediment consisted of dark black organic muck with many fine roots and some sand in the sieved benthic community samples. Undisturbed vegetation grows along the bank in a narrow buffer, but the majority of the riparian zone consists of mowed grass, buildings and roadways.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SD-TTUF-02
Date: June 27, 2001
Time: 9:30 am
Weather: Sunny, 75°F

This was one of two samples collected in the Upper Forebay of Upper Mystic Lake. The eastern shore of the pond is bordered by a park, and the western shore is residential. The samples were collected by boat, launched from the park on Mystic Valley Parkway. The first sample was collected in a bay on the western shore. Many of the residences on the shoreline have seawalls. The water depth at the station was 7.1 feet. The sediment consisted of black orgainc muck with little coarse organic matter. There was a patch of water lilies (*Nymphea odorata*) approximately 6 ft from the sample location. Lilies were prevalent elsewhere on the pond. Cormorants and geese were present on the pond. Bluegills were noted along the eastern shore, and larger fish were jumping near the center of the lake.

Project name: Wells G&H Sediment Triad Sampling 2001
Sample Location: IP-SD-TTAO-03
Date: June 27, 2001
Time: 11:30 am
Weather: Sunny, 85°F

The second station in the Upper Forebay was located closer to the inlet of the Aberjona River. The sample was collected at a water depth of 5 ft. The sediment was similar with some leaf matter in the samples.